

ABSTRACT OF THE DISCLOSURE

There are provided a control apparatus capable of controlling a controlled object with reduce dead time in sign inversion between the input to and the output from one of $\Delta\Sigma$ and $\Sigma\Delta$ modulation algorithms, thereby attaining improved convergence of the output from the controlled object to a target value and improved controllability. An ECU of the control apparatus calculates a limiting value DSMVO2L of a reference input DSMVO2, as $\text{DSMVO2L} = -1$ when $\text{DSMVO2} < -1$, $\text{DSMVO2L} = 1$ when $1 < \text{DSMVO2}$, and $\text{DSMVO2L} = \text{DSMVO2}$ in the other cases. By inputting the limiting value DSMVO2L to a $\Delta\Sigma$ modulation algorithm, a DSM output is calculated, according to which the air-fuel ratio of a mixture supplied to an internal combustion engine is controlled such that output from an oxygen concentration sensor converges to a target value.